11.95

memmert

OPERATING INSTRUCTIONS

Electronically controlled Ovens

UE/BE 200 - 800

ULE 400 - 800

Congratulations on your choice of a MEMMERT Oven!

Manufactured in Germany using the latest production techniques and finest materials available, you now posses a technically superior and fully developed product. Your oven has already been under extensive testing in our factory.

For correct operation of the equipment it is essential to observe the operating and maintenance instructions below. This will ensure that your equipment will give many years´ satisfactory service.

Explanation of signs!
These signs refer to a hazard and indicate:
Note the Operating Instructions!

General safety instructions.
The physical and chemical properties of your load (e.g. inflammation temp. etc.) have strictly to be observed, as otherwise considerable damages (load, oven, surroundings of apparatus) can appear.

Please note that the Memmert ovens described here are <u>not</u> explosion-proof (they do <u>not</u> conform to Occupational Association Regulation VBG 24). They are therefore <u>unsuitable</u> for drying, evaporating or burning-in of enamels or similar substances whose solvent may form an inflammable mixture together with air. There must be no possibility for inflammable or explosive gas/air mixtures to form either inside the cabinet or in the immediate neighbourhood of the equipment.

Severe dust formation in the interior and/or in the surroundings of the cabinet may lead to deposits of fine dust inside the equipment which can result in short-circuits. Adequate precautions should be taken against excessive dust formation.

Transport:
Always use gloves !
If the units have to be carried, at least 2 persons are required for this mode of transport depending on size (Model 200 to 500) or at least 4 persons (Model 600 and 700).

Technical data summary

MEMMERT appliances Series UE, BE, ULE are electrically heated. The temperature in the interior is continuously controlled by a microprocessor-controller with pulse package control. The power module is separated from the controller electronics by an optocoupler to ensure safe electrical isolation according to VDE regulations **(not explosion-proof, see "Loading")**.
The temperature is measured using a PT 100 (4-wires measuring). The temperature-set-accuracy is 0,1°C for BE types and 1°C for UE and ULE types.
Ovens Series UE, BE have natural air circulation. Series ULE ovens have circulation assisted by a fan.
The door is opened by **pulling** the door knob.

Ambient conditions

Ambient temperature 5°C - 40 C, rH 80% for temperatures up to 31°C decreasing linearly to 50% at 40°C. Overvoltage Category:
Contamination degree: 2 according to IEC 664

Setting temperature range

20°C to nominal temperature (See rating plate)

Working temperature range

From 5°C above ambient to nominal temperature = maximum temperature (see rating plate)

Overheat safety device

Serial double adjustable overheat control in compliance with DIN 12880 Class 3.1 and additional mechanical temperature limiting device Class 1.
Class 2 protection (adjustable temperature limiter) available on request.

Class	Aim of protection	Scope of protection	Safety device	Safety measures
1	Protection of the oven	No risk liable to originate from the oven in the event of a fault	TB (temperature limiting device)	Special safety measures required depending on the purpose for which the oven is used
2	Protection of the oven, the environment and the contents of the oven	No risk originating either from the oven or its contents in the event of a fault	TWB (adjustable temperaure limiter) automatically shuts off the oven if the user selected temperature limit is exceeded.	
3		The contents of the oven are protected against overheating	TWW (adjustable overheat controller) takes over control of oven if temperature is exceeded.	

Electrical supply

50 or 60 Hz.. Adequate insulated supply which incorporates earth conductor to EN 61010, Protection IP 20, no humidity protection to DIN 40 050. Interference suppression Grade N to VDE 0875.

Before current-connection please compare label on the oven and instructions of your local current supplier.

model	volume	current consum.	power	voltage	weight
UE 200	32 l	4,78 A	1100 W	230 V~	28 kg
UE 300	39 l	5,22 A	1200 W	230 V~	30 kg
UE/ULE 400	53 l	6,09A	1400 W	230 V~	35 kg
UE/ULE 500	108 l	8,70 A	2000 W	230 V~	50 kg
UE/ULE 600	256 l	10,43 A	2400 W	230 V~	87 kg
UE/ULE 700	416 l	5,80 A	4000 W	400 V 3N~	121 kg
UE/ULE 800	749 l	6,96 A	4800 W	400 V 3N~	164 kg

model	volume	current consum.	power	voltage	weight
BE 200	32 l	1,91 A	440 W	230 V~	28 kg
BE 300	39 l	2,17 A	500 W	230 V~	30 kg
BE 400	53 l	3,48 A	800 W	230 V~	35 kg
BE 500	108 l	3,91 A	900 W	230 V~	50 kg
BE 600	256 l	6,96 A	1600 W	230 V~	87 kg
BE 700	416 l	7,83 A	1800 W	230 V~	121 kg
BE 800	749 l	8,70 A	2000 W	230 V~	164 kg

Quality of material
Memmert is using stainless steel (Spec. 1.4301) for the external casing as well as for the interior, outstanding because of its high stability, optimum hygienic features and corrosion resistance against many (not all!) chemical combinations (Attention e.g. at chlorine combinations!).

Installation options

The units can be set up on the floor or on a table (bench), model 500 - 700 on a subframe (accessory, see Fig. c). Ensure at least 150 mm clearance between back of oven and wall. The distance between ceiling and oven should not be less than 200 mm. After the cabinet has been set horizontally the door can be adjusted if required (see **MAINTENANCE**).

The model 800 is movable. The front castors are lockable by means of a fixation. In order to grant the stability the front castors **must always be adjusted to the front** for locking.

Wall mounting except model 800

Up to model 700 for all ovens metal mounting brackets (see Fig. a) are available. Mounting bracket is delivered with incombustible plate. Dimensions of fixing screws depend on the total weight (equipment and loading) of the charge and the quality of the wall.

Stacking device exept model 800

Where the requirement is for two ovens of the same size to be placed one on top of the other, the oven with the lower working temperature should be placed at the bottom (Fig. b)

Remove the front feet of the top oven and replace them with the ones supplied with the stacking device (only if the ovens are not originally supplied with the stacking device). Remove the top of the bottom oven and turning it upside down place the drilling jig into the back corner. Mark out the hole position and drill a 4,2 mm diameter hole.
With the screws provided fix the centering cylinders into position and re-fix top cover.

Model 700 can only be stacked with an intermediate frame.

INSTALLATION OPTIONS

Pitches of holes for wall fixation (wall bracket)

Model	A mm	inch	B mm	inch	C mm	inch
200	489	19,25	770	30,32		
300	569	22,4	770	33.32		
400	489	19,25	850	33.47		
500	649	25,55	930	36,61		
600	889	35,00	1090	42,91	540	21,26
700	1129	44,45	1250	49,21	410	16,14

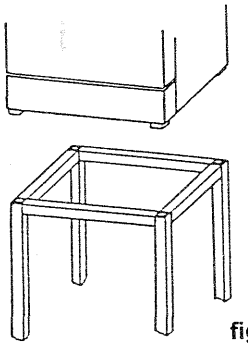


fig.

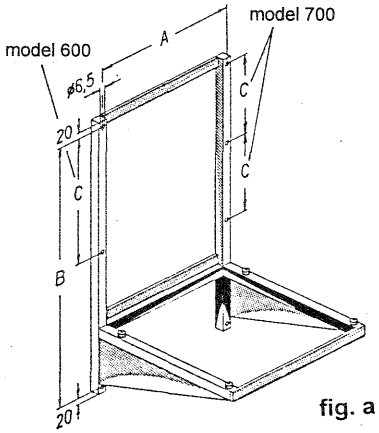


fig. a

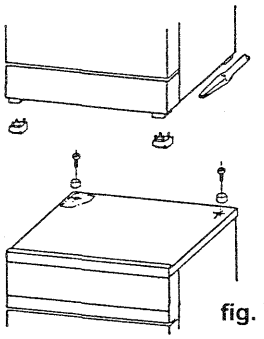


fig. b

WARNING!
Before removing top cover -
pull out plug!

Attention!

Take special care when working at high temperature!
Outside case temperature may be hot!

PUTTING INTO OPERATION

Attention!
Extremely strong shocks during transport can cause a displacement of the temperature sensors in the holding clips inside the working space.

Take care before the first putting into operation that the temperature sensors are checked on their correct position and if necessary slided cautiously into the holding clip resp. pulled out of the holding clip (see Fig. d).

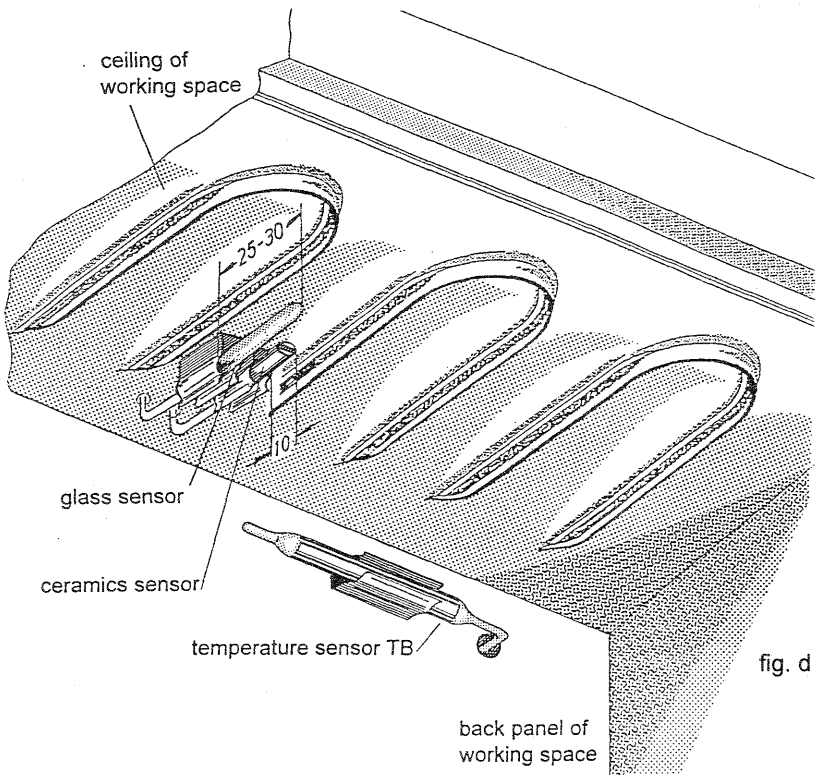


fig. d

Attention!
When the oven - unload - is started up for the first time it should be run under supervision until steady conditions are reached.

Temperature setting and overheat safety devices.

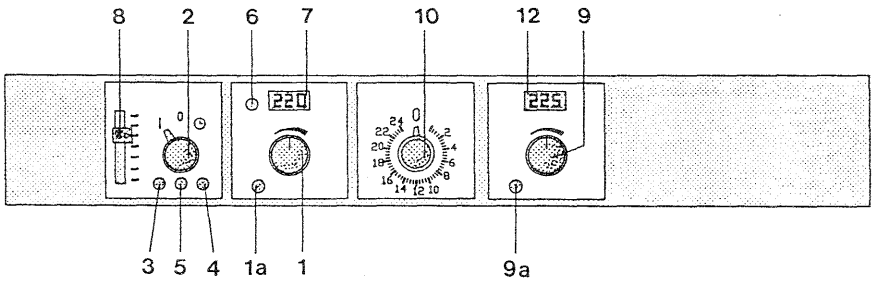


fig. e

Units with adjustable overheat controller TWW class 3.1

1. Set mains supply switch, rotary switch No. 2 to position I. Green pilot lamp No. 3 shows: "unit ready for use". After switching on the former setpoint is indicated for a short while.
   The yellow pilot lamp No. 4 indicates: "heating on".

2. To select the desired temperature with knob 1 it is necessary to operate key 6.
   While the key is depressed the digital temperature indication 7 switches to setpoint selection resp. nominal value indication, indicated by a blinking point in the display.
   The setpoint indicated can only be changed with knob 1 when key 6 is pressed. If knob 1 is moved quickly, the setpoint is adjusting in large steps while it changes in single steps upon slow operation. After releasing of key 6 the setpoint adjusted is still shown for a short time (blinking point).
   Thereafter it switches automatically on the actual value.
   The scale can be locked with the screw 1a to prevent unintentional changes.
   When key 6 has not been operated the digital display 7 always indicates the actual temperature inside the chamber. Operating the key displays the selected temperature setting (blinking point).

3. Set the adjustable overheat controller TWW with knob 9 above the selected working temperature by an appropriate amount (e.g. 5°C). This scale can also be locked by turning screw 9a. The selected setpoint of the overheat controller TWW can always be read on the temperature display 12.

   Steady conditions have been reached when the desired temperature can be read on the built-in digital temperature display 7 for several times.

4. In order to provide optimum protection of thermal-sensitive loads better against overtemperatures in case of failure of the thermostat it is advisable to reset the adjustable overheat controller TWW (rotary button No. 9) - **after** building-up and steady temperature conditions have been reached - so far that it is just not operating.
   This setpoint-reduction should be effected **very slowly** step by step for one digit (resp. one rest) slightly above the actual steady temperature (approx. 3°C resp. at incubators approx. 0.5°C).

Malfunction

If the selected operating temperature is exceeded due to a fault in the temperature control circuit, the temperature control is taken over by the overtemperature controller as soon as the temperature set with knob 9 and displayed on display 12 has been reached. This is indicated by flashing of the red signal lamp 5. **The unit must be checked immediately by a qualified electrician.**

Units with adjustable overheat cut-out but manual reset TWB class 2

Putting the oven into operation as well as setting temperatures have to be done as described under **"adjustable overheat controller TWW - item 1 - 3"**

Malfunction:
If the adjustable temperature limiter TWB is activated due to a fault, the TWB switches off the heating on all poles when the temperature set with knob 9 and indicated on display 12 has been reached. The adjustable temperature limiter can be reset by switching the knob 2 briefly off and then on again after the temperature has dropped below the temperature reading of display 12. **The unit must be checked immediately by a qualified electrician.**

Temperature limiting device mechanical

This Memmert oven is equipped with an electronic adjustable overheat controller (Class 3.1 in compliance with DIN 12 880). An adjustable temperature limiter (Class 2 in compliance with DIN 12880) can be specified in place of the electronic adjustable overheat controller. In addition, either variant is equipped with a temperature limiting device (Class 1 in compliance with DIN 12880) which automatically shuts of the oven if it exceeds the maximum termperature by more than 10°C.

Malfunction: In case the adjustable overheat controller or the adjustable temperature limiter malfunction, and the oven exceeds its maximum temperature rating by 10°C, the temperature limiting device will automatically shut off the heater. In this case the temperature display of the working controller and the yellow control lights will turn off. The green and red control light, as well as the display of the overheat controller, will remain on. In ovens with forced convection, the air turbine will continue to run.

In case of a malfunction - overheat condition- the unit has to be checked by a qualified service engineer!

If the oven is exposed to freezing temperatures for an extended period, the temperatur limiting device turns on. In this case, reset the device by following the procedure for resetting the temperature limiting device, steps 2-5.

WARNING!
Before removing top cover -
pull out plug

Procedure for resetting the temperature limiting device

1. Let the oven cool down before attempting to service it.
2. Remove screws along the top edge of the backside of the cover.
3. Slightly raise the top cover of the oven and slowly slide the cover backwards.
4. Press the red reset button on the temperature limiting device. The oven will emit an audible click when the temperature limiting device is reset.
5. Reassemble the oven. Make sure to use washers when fastening the screws.

Function control for the adjustable overheat controller (class 3.1) and the adjustable temperature limiting device (class 2)

The safety devices (Class 3.1 and Class 2) should be checked on a daily basis once the oven has stabilized at the desired temperature.

To perform this safety check, begin by loosening screw 9a. Reduce the setting of the protection device until red control light 5 turns on. At this point temperature display 12 and temperature display 7 should show the same temperature (±0,5°C for incubators, ±1°C for other ovens).

Now set the protection device as described in the paragraph **"Adjustable overheat controller"** - point 3. The red control light will turn off.

Operation with timer

Put main supply switch rotary knob No.2 in position ⏲ .

Set temperature as described under **"Units with adjustable overheat controller class 3.1; - item 1 - 4".** Set the required time period with the rotary knob No.10.
Running time 50 Hz = 24 hours.
Running time 60 Hz = 20 hours.
Unit is automatically turned off when the elapsed time has run down. Timers are available for fitting by the user after delivery and full instructions are supplied with the timers to be retrofitted.

The installation has to be made by a service engineer.

Operation with programme timer (special equipment)

1. Adjust programme timer 22 (which is **not** running when main switch, rotary knob No. 2, is in 0-position) to daytime (actual time).

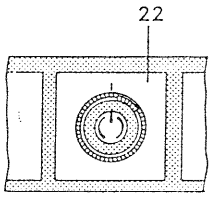
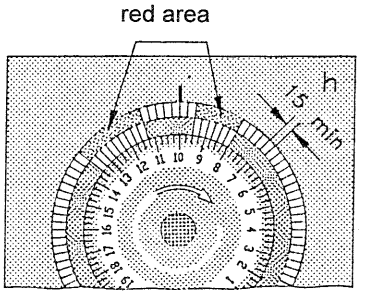


fig e-1

2. Operation time of temperature regulator is adjusted by programme timer 22 by pushing single switch buttons (red section is visible).
   If switch buttons are not pushed (black section is visible) the temperature regulator is out of service and the heating elements are cut off.
3. Set the main switch, rotary knob No. 2, to position ⏲. The green pilot lamp No. 3 shows that the oven is ready for operation. The yellow pilot lamp No. 4 indicates the state of the heating.
4. Set temperature as described under **"Units with adjustable overheat controller class 3.1; item 1 - 4".**
   The heating and cooling times depend on the load inside the oven and on the ambient temperature and must be taken into account when setting the timer riders.
   The programme runs continually. Switching off by hand with main switch No. 2 to position 0.

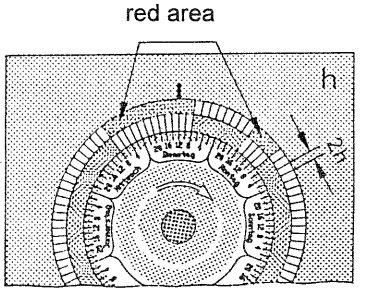
An example for a programme timer (24 h) is shown in the illustration below:



Actual time 10.00 o'clock. Heating/control was operating from 8.00 till 9.30 and then switched off (cooling - period). At 11.15 heating/control is switched on again and runs till 13.30. Afterwards a cooling - period is starting again.

fig e-2

An example for a 7-day programme timer is shown in the illustration below:



Actual time: Tuesday 12 o'clock. Heating/control was operating on Monday from 8.00 till 16.00. It was automatically switched off at the end of the switching-on period. On Tuesday at 8.00 heating/control was switched on again and is operating till Wednesday 8.00. Afterwards a inactive period is starting again.

fig e-3

Operation with programme-timer with timer for final switching off (special equipment from mod. 500)

Select the temperature as described under **"Operation with programme-timer".**
Timer 19 has to be used for final switching off the oven and has to be set as described under **"Operation with timer".**
The oven switches off when the set time has elapsed.

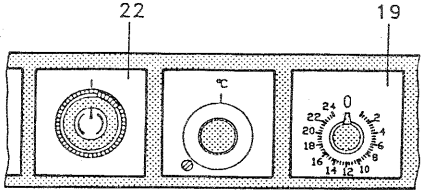


fig. e-4

Adjustable air turbine (special equipment)

The speed of the air turbine can be continuously varied with rotary button No. 12.

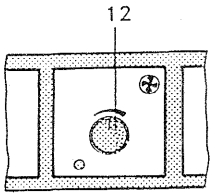


fig e-5

Discon-nectable air turbine (special equipment)

The air turbine can be disconnected by switch 13.

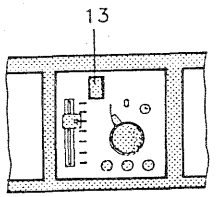


fig e-6

Fresh air ventilation

The amount of fresh air entry can be adjusted by the slide control knob No. 8. The flap is closed in position 0; there is virtually no through ventilation. By opening the flap the air in the working space can be renewed to a limited extent.

The maximum fresh air entry possible is obtained at position 6 although this does not signify a complete change of air within the chamber. Intermediate position on the scale vary the degree of ventilation accordingly.

Important for loading!
Units described in this instruction manual must not be used for drying or warming substances which generate ignitable vapours when mixed with air.

The units described here must never be operated in areas with an explosive atmosphere.

For correct operation and uniform temperature distribution it is essential to maintain free air circulation throughout the oven. The contents of the oven should therefore not be packed tightly nor should they be placed directly against any of the heating ribs either to the sides, top or bottom of the oven. (Note the loading diagrams on the ovens).

When putting the shelves into the apparatus please bear in mind that there is a little air gap between the rear of the working chamber and the shelf in order to permit better air circulation.

For the maximum number of shelves possible together with the permissible loads see schedule.

In certain situations where, for example, the load is packed tightly and the ventilation slide is fully open it is possible that the unit will control at a temperature below that set on the thermostat. In order to compensate it may be necessary to increase the thermostat setting until the desired temperature is shown on the digital display 7.

The following schedule gives recommended loading levels which will ensure homogeneous temperature distribution within the working chamber.

Model	Max. number of shelves	Load each shelf max. kg	Total load kg
200	3	15	30
300	3	12	30
400	4	15	40
500	5	15	50
600	7	30	80
700	8	30	100
800	10	30	160

MAINTENANCE

General information

Memmert appliances require minimal servicing. It is recommended, that the moving parts on the doors (hinges and door lock) should be lubricated with a thin silicone grease once a year (with continuous use 4 times a year).

In case of a malfunction which makes the opening of the unit necessary this work has to be performed by a qualified service engineer.

A tightly closing door is an essential requirement on ovens. MEMMERT-ovens ensure perfectly tight closing of the door through a seal on the oven casing. The door seal presses accurately against the casing seal. In continuous operation the flexible seal material may acquire a permanent set. For proper closing of the door it may be necessary to adjust the hinge or the locking plate.

Readjusting the door

After releasing the screw No.12 (**ATTENTION!** Screw No. 12 is secured with glue. Loosen jerky with inner hexagon key wrench 2 mm) the door can be adjusted by turning the eccentric 13 in the direction of the arrow (using a screwdriver). Tighten screw No. 12 again.
In addition the upper part No.14 of the door hinge can be moved slightly in the direction of the arrow after releasing the 2 screws at the top or bottom of the door.

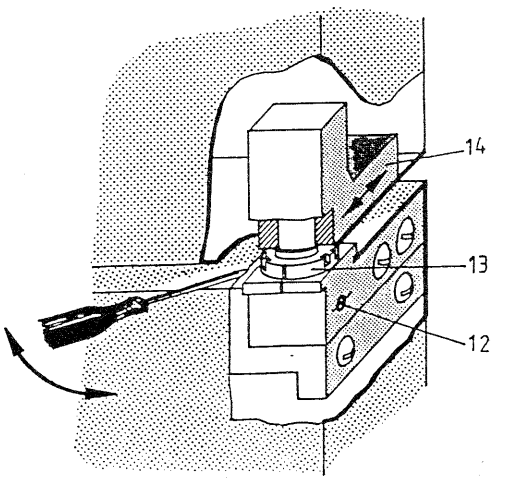


fig. g

The locking plate can also be readjusted in the direction of the arrow after releasing the screw No.15.
Ensure that the cover is again screwed down tightly.

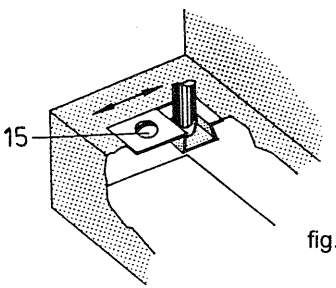


fig. h

Cleaning

By regular cleaning of the easy to clean interior, residues are avoided which at continuous influence can impair the outfit and function of the oven.

The unit can be cleaned with commercial stainless steel cleaning agent. Please note that objects liable to rust must not be placed into the interior. Rust sediments lead to contamination of the interior or external casing.

If rust stains caused by contamination occur on the interior surface, the affected areas must be cleaned and polished immediately.

Check list for rectifying faults - **This can only be done by a service engineer.**

Fault	Cause
Knob 2 in position I, green lamp 3 not on	**Equipment not connected** **Lamp faulty**
No temperature indication on the display	**Microfuse defective** T32mA 250 V~on printed wiring board 55121.x
No temperature indication on the display Red lamp 5 on	**Temperature Limiting Device turned on** Press the red reset button (see procedures for resetting the temperature limiting device).
Yellow lamp 4 not on	**Ambient temperature too high, working temperature in oven higher than the working temperature set with knob 1 (set point). Lamp faulty**
Display: "E-1" *	**Circuit element TRIAC defective,** send printed wiring board back to Memmert for exchange.
Display "E-2" *	Possibility 1. **Heating defective, the oven does not heat anymore** Check current passage at the heating terminals according to wiring diagram; Possibility 2 **Circuit element TRIAC defective;** Send printed wiring board back to Memmert for exchange.
Display "E-3" *	**PT100 defective**
Display "E-4" *	**Internal Configuration Error.** Turn off the oven, then turn it back **"on"**.

* In case of a malfunction- Display E1 to E4 - .Please inform the Memmert service department.

The details in these Operation Instructions must be carefully observed in order to ensure satisfactory operation.
Warranty and claims for damage are excluded if these instructions are disregarded.

We reserve the right to make changes in technical specifications.
Dimensions subject to confirmation.

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